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IS 7124 (1973): Gun powder [CHD 26: Explosives and Pyrotechnics]



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“Knowledge is such a treasure which cannot be stolen”

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IS : 7124 - 1973

Indian Standard
SPECIFICATION FOR GUN POWDER

UDC 662.221.1



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AMENDMENT NO. 1 JANUARY 1976
TO
IS:7124-1973 SPECIFICATION FOR GUN POWDER

IS : 1351-1959 has been withdrawn as the methods covered under this standard have been published in IS:1350(Part IV/Sec 1)-1975. This amendment is, therefore, being issued.

Alterations

(Page 6, clause A-1.1.1, line 4) - Substitute 'in 5 of IS:1350(Part IV/Sec 1)-1975‡' for 'in 6 of IS:1351-1959'.*

(Page 6, foot-notes, last line) - Substitute the following for the existing matter:

‡Methods of test for coal and coke:
Part IV Ultimate analysis, Sec 1
Determination of carbon and hydrogen.'

(CDC 51)

Reprography Unit, ISI, New Delhi

*Indian Standard***SPECIFICATION FOR GUN POWDER**

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Indian Standard
SPECIFICATION FOR GUN POWDER

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 5 November 1973, after the draft finalized by the Explosives and Pyrotechnics Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard requires reference to IS: 6609 (Part I)-1973* which is a necessary adjunct to it.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of tests for gun powder commonly known as black powder.

2. TYPES

2.1 The material shall be of following three types:

- a) Granulated,
- b) Pebble, and
- c) Mealed.

3. REQUIREMENTS

3.1 Description — The material shall consist essentially of an intimate mixture of potassium nitrate, charcoal and sulphur.

3.2 Physical Appearance — Gun powder shall be homogeneous and shall be free from lumps, visible impurities and foreign matter.

3.2.1 Granulated powder shall be in the form of grains with rounded edges. It shall be thoroughly glazed by graphiting or friction as required.

*Methods of test for commercial blasting explosives and accessories: Part I Gun powder.

†Rules for rounding off numerical values (*revised*).

IS : 7124 - 1973

3.2.2 The pebble powder shall be granular in form with rounded edges and shall be glazed by graphiting.

3.2.3 Mealed powder shall be in the form of fine powder.

3.3 Particle Size — The particle size of the material when determined by the method prescribed in **2.1.8** of IS: 6609 (Part I)-1973* shall be as agreed to between the purchaser and the supplier.

3.4 The material shall also comply with the requirements prescribed in Table 1 when tested according to the methods prescribed in IS:6609 (Part I)-1973*. Reference to the relevant clauses of IS : 6609 (Part I)-1973* is given in col 4 of the table.

TABLE 1 REQUIREMENTS FOR GUN POWDER

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST [REF TO CL NO. IN IS: 6609 (PART I)-1973*]
(1)	(2)	(3)	(4)
i)	Potassium nitrate, percent by mass	75.0 ± 2.0	2.6
ii)	Charcoal, percent by mass	15.0 ± 2.0	2.7
iii)	Sulphur, percent by mass	10.0 ± 1.0	2.7
iv)	Moisture, percent by mass	0.9 to 1.4	2.5
v)	Chlorides (as KCl), percent by mass, <i>Max</i>	0.15	2.13
vi)	Total chlorine (as KClO ₄), percent by mass, <i>Max</i>	0.40	2.12
vii)	Sodium compound (as NaNO ₄), percent by mass, <i>Max</i>	0.30	2.6.2
viii)	Sulphate (as K ₂ SO ₄), percent by mass, <i>Max</i>	0.10	2.15
ix)	Acidity	Not more than that of 40 ppm of sulphuric acid	2.9
x)	†Density, not less than:		2.10
	a) for granulated powder	1.70	
	b) for pebble powder	1.75	

NOTE — The composition specified in Table 1 normally corresponds to gun powder having a lead fuse burning speed of 98 ± 3 seconds per 100 cm. However, a change in the composition may be effected, if necessary, to get the specified lead fuse speed.

*Methods of test for commercial blasting explosives and accessories: Part I Gun powder.

†Not applicable to mealed powder.

*Methods of test for commercial blasting explosives and accessories: Part I Gun powder.

3.5 Flashing Test — When tested according to the method prescribed in 2.8 of IS: 6609 (Part I)-1973*, the material shall burn with very few sparks and the residue left shall be in fine powder form free from specks of fused salt and carbon. The residue shall be not more than 6 percent by mass.

3.6 Hygroscopicity — The hygroscopicity of the material when determined by the method prescribed in 2.11 of IS : 6609 (Part I)-1973* shall not exceed 3.0 percent.

NOTE — This requirement is not applicable to mealed powder.

3.7 Lead Fuse Burning Speed — When tested according to the method prescribed in 2.17 of IS : 6609 (Part I)-1973*, the burning speed of the material shall be 98 ± 3 seconds per 100 cm.

NOTE 1 — Gun powder of other lead fuse burning speed as agreed to between the purchaser and the supplier may be required. In that case the composition of the powder may be suitably varied (*see* Table 1).

NOTE 2 — This requirement shall apply only to granulated powder.

3.8 Carbon Content of Charcoal — The carbon content of the charcoal extracted from gun powder shall be 70 to 80 percent by mass when determined according to the method prescribed in Appendix A.

NOTE — This requirement shall apply only to mealed powder.

4. PACKING AND MARKING

4.1 Packing — The material shall be packed in clean and sound containers as agreed to between the purchaser and the supplier.

4.1.1 When the material is required to be transported by rail, the packing shall conform to the provisions of Indian Railways Conference Association, Red Tariff No. 18.

4.2 Marking — The containers shall be legibly and indelibly marked with the following information:

- a) Name and type of the material;
- b) Net mass and average gross mass;
- c) Manufacturer's name and/or his recognized trade-mark, if any;
- d) Year of manufacture; and
- e) Lot number in code or otherwise to enable the batch of manufacture to be traced from records.

*Methods of test for commercial blasting explosives and accessories: Part I Gun powder.

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4.2.1 The containers shall also be marked with the words 'EXPLOSIVE CLASS Ia' (*see* IS: 1446-1959*) alongwith the appropriate symbol indicating the explosive nature of the material [*see* Fig. 1 of IS : 1260 (Part I) -1973†].

4.3 The packing and marking shall further conform to the provisions of the Indian Explosives Rules, 1940 as amended from time to time.

4.3.1 The containers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

A P P E N D I X A

(*Clause 3.8*)

DETERMINATION OF CARBON CONTENT OF CHARCOAL

A-1. PROCEDURE

A-1.1 Extract about 10 g of gun powder successively with hot water and carbon disulphide. Dry the residue at 60°C in a current of nitrogen, free from oxygen. Allow the charcoal to cool in nitrogen.

A-1.1.1 Take 0.5 g of the extracted charcoal and again dry this portion to constant mass in nitrogen atmosphere at 125 to 143°C. Without further exposure to air, determine the carbon content by the method prescribed in 6 IS : 1351-1959‡.

*Classification of dangerous goods.

†Pictorial marking for handling and labelling of goods: Part I Dangerous goods. (*first revision*).

‡Methods of test for coal and coke — ultimate analysis.

**INDIAN STANDARDS
ON
EXPLOSIVES AND RAW MATERIALS FOR EXPLOSIVES**

IS:

- 301-1963 Potassium nitrate for explosives and pyrotechnic compositions (*revised*)
 438-1972 Aluminium powder for explosives and pyrotechnic compositions (*first revision*)
 708-1970 Potassium chlorate, technical (*first revision*)
 2012-1961 Red phosphorus
 2307-1962 Magnesium powder for explosives and pyrotechnic compositions
 4396-1967 Barium nitrate for explosives and pyrotechnic compositions
 4668-1967 Ammonium nitrate for explosives
 5670-1970 Lead thiocyanate for explosive and pyrotechnic compositions
 5671-1970 Strontium nitrate for pyrotechnic compositions
 5713-1970 Manganese dioxide for explosive and pyrotechnic compositions
 5731-1970 Antimony sulphide for explosive and pyrotechnic compositions
 6609 (Part I)-1973 Methods of test for commercial blasting explosives and accessories:
 Part I Gun powder
 6609 (Part III)-1973 Methods of test for commercial blasting explosives and accessories:
 Part III Detonators
 6609 (Part IV)-1972 Methods of test for commercial blasting explosives and accessories:
 Part IV Detonating fuses
 6609 (Part V)-1972 Methods of test for commercial blasting explosives and accessories:
 Part V Safety fuses
 7124-1973 Gun powder

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